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SYNTHETIC RESIN RETAINER AND ANGULAR BALL BEARING

BACKGROUND OF THE INVENTION

[0001] This invention relates to a synthetic resin retainer for ball bearings suitable for high-speed rotation and an angular ball bearing.

[0002] As an angular ball bearing suitable for high-speed rotation for rotatably supporting a rotary shaft rotated at a high speed, such as a spindle of a machine tool, one described in Japan patent publication 7-4439 is known.

[0003] Fig. 15 shows the conventional angular ball bearing. It has a retainer 52 made of a synthetic resin and mounted between an outer ring 50 and an inner ring 51. A ball 54 is accommodated in each of a plurality of pockets 53 formed in the retainer 52 at equal circumferential intervals to support the outer ring 50 and the inner ring 51 so as to be rotatable relative to each other.

[0004] The pockets 53 formed in the retainer 52 are cylindrical and are each formed with a conical guide surface 56 at the radially inner end of the cylindrical inner surface 55 so as to be guided by the ball 54. A circumferential, axial and diametric guide clearance 57 is formed between the conical guide surface 56 and the ball 54. The guide clearance 57 is smaller than a pocket clearance 58 formed between the ball 54 and the cylindrical inner surface 55 of each pocket 53.

[0005] Here, the radius of curvature r11 of the conical guide surfaces 56 at their radially outer end is equal to the radius of curvature of the cylindrical inner surfaces 55.

[0006] In the ball bearing having such a structure, during rotation of